

Thymus

(Lec.4)

1. Is central lymphatic organ, located in the anterior mediastinum.
2. It is composed of two lobules joined along the midline by connective tissue and enclosed by dense connective tissue capsule and send loose connective tissue septa that divide the thymus into lobules.

Each lobule has :

Cortex : Is darkly stained (greater cell density)

- While **medulla** is pale surrounding by the cortex
- .Epithelial reticular cells form a cellular scaffolding for the organ – best seen in the loosely packed medulla
- **Epithelial reticular cells:**

Have acidophilic cytoplasm with processes that attached to the processes of other cells by desmosomes. and occluding junctions to give a reticulum of support to the thymus.

They secrete peptide hormone (hormone – like inductive substance).

Thymosin, thymopoietin, serum thymus factor.

They :Control T- cell production.

Regulate development and maturation of T cells

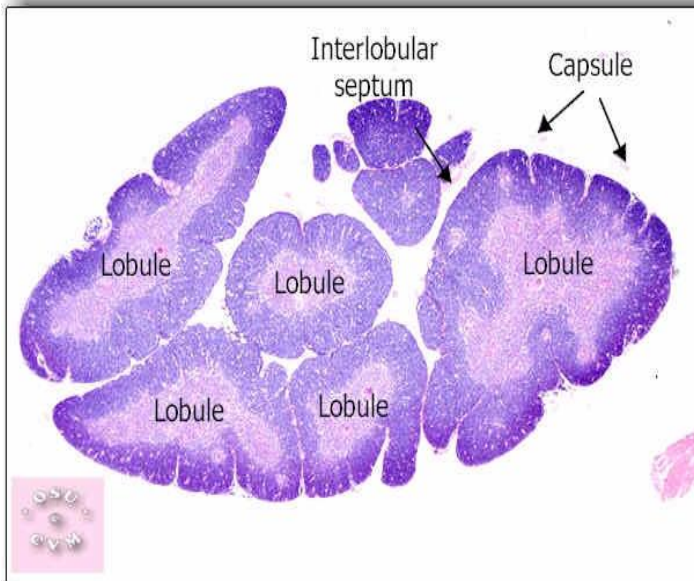
Cortex

Is the outer layer of thymus darkly stained due to : Dense aggregation of T lymphocytes (thymocytes).They don't aggregate as nodules, macrophages; epithelial reticular cells are seen.

Medulla:

Inner layer is faintly stained contains :

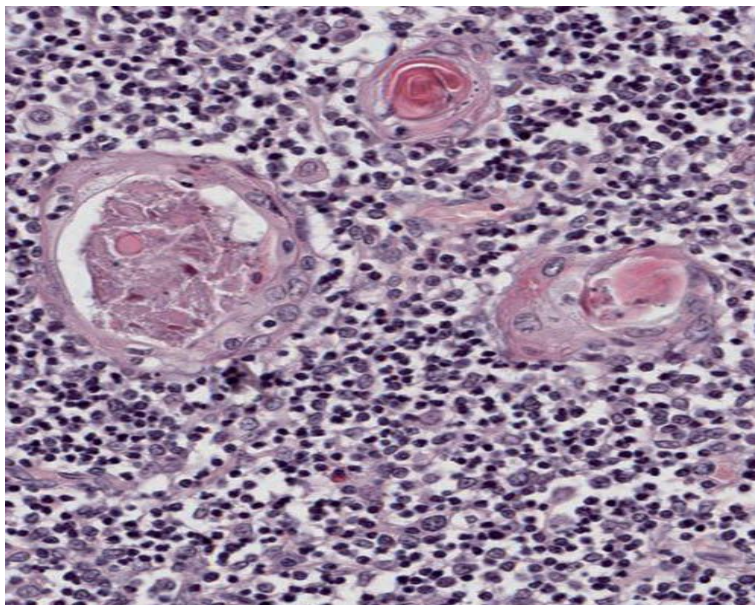
large number of epithelial reticular cells; few T-cells, macrophages, mast and plasma cells.



Thymic (Hassall's corpuscles)

Are eosinophilic Oval structures (30- 150um) in diameter.

Composed of flatten epithelial reticular cells arranged as lamellae concentrically arranged.



Blood thymus barrier:

The barrier found in the cortex separating proliferating thymocytes from the blood.

Lymphocytes are prevented from be in contact with antigens by a physical barrier that .

Prevent the entry of antigens to the cortex from blood.

The epithelial reticular cells surround the capillaries of cortex,so The barrier is composed :of

Endothelium of capillary which is continuous(not fenestrated).

Thick basement membrane of endothelium.

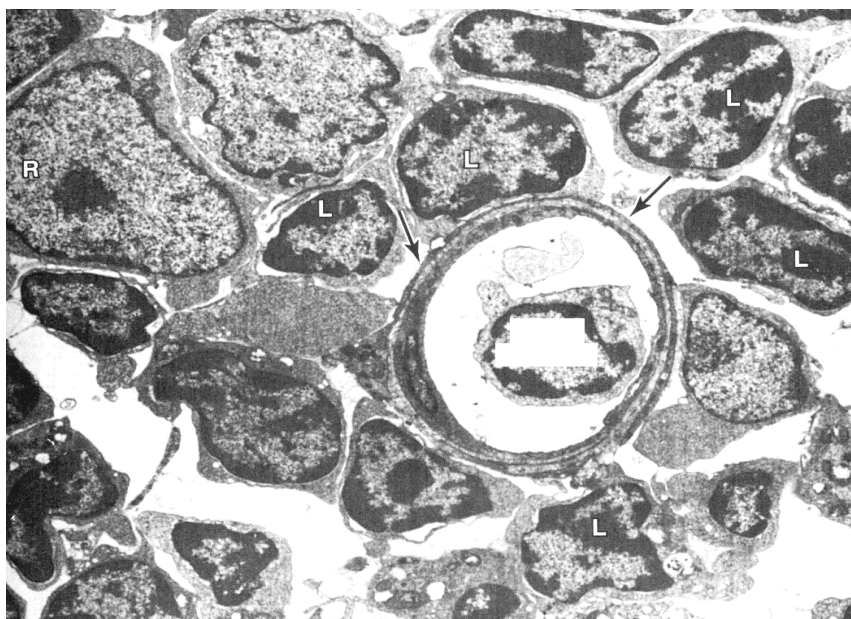
Epithelial reticular cells.

Basement membrane of these cells.

Perivascular connective T. contains macrophages.

In medulla there is no special barrier, because the capillary of medulla is fenestrated, incompletely covered by epithelial reticular cells.

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Thymus involution

- Thymus reaches its maximum weight at puberty (30-40)gm., then begins to involute.

The involution involves: Decrease in the weight.

1-Gradual loss of cortical lymphocytes

2-Medulla begins to atrophy at puberty .

3-Increased connective tissue trabeculae or septa.

4-Adipose cells increase in number and replace the thymocytes and epithelial reticular cells.

5-Thymic corpuscles increased in number and size through out life.

Major functions of thymus

supports the proliferation and programming of T lymphocytes.

It also secretes the hormone thymosin and thymopoietin that promotes the function and maintenance of T lymphocytes in particular.

See your text book for the related fingers)

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